

IN THE CLAIMS:

Claim 1 (previously presented) An isolated DNA sequence from the promoter region upstream of a nectary-specific expressed sequence, which nectary-specific expressed sequence encodes a protein comprising the amino acid sequence given in SEQ ID NO: 1, or a protein that has at least 60% homology to the amino acid sequence given in SEQ ID NO: 1.

Claim 2 (previously presented) An isolated DNA sequence according to claim 1, wherein the nectary-specific expressed sequence has:

- a) a nucleotide sequence given in SEQ ID NO: 4, or
- b) a nucleotide sequence which hybridises with (a) or with a fragment of (a) under the following conditions: pre-hybridisation for 1h at about 65°C in a solution of Church and Gilbert, comprising 0.5 M solution phosphate, pH 7.2, 1mM EDTA, 1% BSA, 7% SDS, followed by hybridisation in the same solution for 18h at about 65°C, followed by washing three times in 0.1 x SDS 0.1% SDS at about 65°C for 30 min., or
- c) a nucleotide sequence that has at least 85% homology to the nucleotide sequence of a).

Claim 3 (previously presented) An isolated DNA sequence according to claim 1,

obtained from a plant of *Petunia hybrida*, the sequence consisting essentially of the sequence given in SEQ ID NO:7, or a functional fragment thereof having promoter activity.

Claim 4 (previously presented) An isolated DNA sequence encoding a protein comprising the amino acid sequence given in SEQ ID NO:1, or a protein having at least 60% homology with the amino acid sequence given in SEQ ID NO: 1, which protein, when ectopically expressed, plays a role in sugar metabolism, the expression of the DNA sequence being predominantly confined to the nectaries of a plant.

Claim 5 (previously presented) An isolated DNA sequence according to claim 4 having:

- a) A nucleotide sequence given in SEQ ID NO:4, or
- b) a nucleotide sequence that hybridises with the nucleotide sequence of (a) or with a fragment of (a) under the following hybridisation conditions: pre-hybridisation for 1h at about 65°C in a solution of Church and Gilbert, comprising 0.5 M sodium phosphate, pH 7.2, 1 mM EDTA, 1% BSA, 7% SDS, followed by hybridisation in the same solution for 18h at about 65°C, followed by washing three times in 0.1 x SSC, 0.1% SDS at about 65°C for 30 min., or
- c) a nucleotide sequence that has at least 85% homology to

the nucleotide sequence of a).

Claim 6 (previously presented) An isolated DNA sequence that results from the sequence shown in SEQ ID NO:4 by insertion, deletion or substitution of one or more nucleotides, including naturally occurring variations or variations introduced by targeted mutagenesis or recombination, wherein the DNA sequence encodes a protein exhibiting the same function as the protein according to claim 4.

Claim 7 (currently amended) An isolated DNA sequence according to claim 4 having a nucleotide sequence given in SEQ ID NO: 4, said sequence being produced by ~~current~~ DNA synthesis techniques.

Claim 8 (previously presented) An isolated DNA sequence comprising the coding region for a signal peptide, wherein the information contained in the DNA sequence permits, upon translational fusion with a DNA sequence encoding a protein that is expressed in nectaries, targeting of the protein to nectar.

Claim 9 (previously presented) An isolated DNA sequence according to claim 8, having :

- a) a nucleotide sequence given in SEQ ID NO: 6 obtained from a plant of *Calluna vulgaris*, or
- b) a nucleotide sequence that hybridises with the nucleotide sequence given in a), under the following

hybridisation conditions: pre-hybridisation for 1h at about 65°C in a solution of Church and Gilbert, comprising 0.5 M sodium phosphate, pH 7.2, 1 mM EDTA, 1% BSA, 7% SDS, followed by hybridisation in the same solution for 18h at about 65°C, followed by washing three times in 0.1 x SSC, 0.1% SDS at about 65°C for 30 min., or

- c) a nucleotide sequence that has at least 95% homology to the nucleotide sequence of a).

Claim 10 (previously presented) A recombinant double-stranded DNA molecule comprising an expression cassette comprising the following constituents:

- i) a promoter functional in plants,
- ii) DNA sequence coding for a protein as defined in claim 4 which is fused to the promoter sequence in sense or antisense orientation, and optionally
- iii) a signal sequence functional in plants for the transcription determination and polyadenylation of an RNA molecule.

Claim 11 (previously presented) A recombinant double-stranded DNA molecule comprising an expression cassette comprising the following constituents:

- i) a promoter functional in nectaries of plants,
- ii) a DNA sequence coding for a protein which is fused to the promoter sequence in sense or antisense orientation, and optionally
- iii) a signal sequence functional in plants for the transcription termination and polyadenylation of an RNA molecule.

Claim 12 (previously presented) A recombinant double-stranded DNA molecule comprising an expression cassette comprising the following constituents:

- i) a promoter functional in nectaries of plants,
- ii) a DNA sequence encoding a protein which is fused to the promoter,
- iii) a DNA sequence encoding a signal peptide that targets the recombinant protein to nectar, which is translationally fused to the DNA sequence encoding the recombinant protein, and optionally
- iv) a signal sequence functional in plants for the transcription termination and polyadenylation of an RNA molecule.

Claim 13 (currently amended) A recombinant double-stranded DNA molecule according to claim ~~11~~ 12, wherein the promoter is an isolated DNA sequence from the

promoter region upstream of a nectary-specific expressed sequence, which nectary-specific expressed sequence encodes a protein comprising the amino acid sequence given in SEQ ID NO: 1, or a protein that has at least 60% homology to the amino acid sequence given in SEQ ID NO: 1.

Claim 14 (previously presented) A recombinant double-stranded DNA molecule according to claim 12 wherein the DNA sequence encoding a signal peptide is an isolated DNA sequence comprising the coding region for a signal peptide, wherein the information contained in the DNA sequence permits, upon translational fusion with a DNA sequence encoding a protein that is expressed in nectaries, targeting of the protein to nectar.

Claim 15 (previously presented) A process for producing a transgenic plant exhibiting excretion of a recombinant protein in its nectar, comprising:

- i) introducing in a plant cell a recombinant double-stranded DNA-molecule as defined in claim 12, wherein the recombinant protein is excreted in nectar,
- ii) regenerating plants from the transgenic cell, and
- iii) selecting transgenic plants.

Claim 16 (previously presented) A process for producing a transgenic plant exhibiting a modified nectar composition, comprising;

- i) introducing in a plant cell a recombinant double-

stranded DNA-molecule as defined in claim 11, wherein  
the recombinant protein interferes with metabolic  
pathways in the nectaries,

- ii) regenerating plants from the transgenic cell, and
- iii) selecting transgenic plants.

Claim 17 (previously presented) A process for producing a transgenic plant exhibiting  
a modified nectar secretion, comprising:

- i) introducing in a plant cell a recombinant double-  
stranded DNA-molecule as defined in claim 11, wherein  
the recombinant protein interferes with sink strength of  
nectaries,
- ii) regenerating plants from the transgenic cell, and
- iii) selecting transgenic plants.

Claim 18 (previously presented) A process for producing a transgenic plant exhibiting  
a modified nectary development, comprising:

- i) introducing in a plant cell a recombinant double-  
stranded DNA-molecule as defined in claim 11, wherein  
the recombinant protein interferes with the development  
of nectaries,
- ii) regenerating plants from the transgenic cell, and
- iii) selecting transgenic plants.

Claim 19 (previously presented) A process for producing honey from modified nectar of transgenic plants, comprising:


- i) producing a transgenic plant by introducing in a plant cell a recombinant double-stranded DNA molecule as defined in claim 11, regenerating plants from the transgenic cell, and selecting modified plants exhibiting the excretion of nectar with a modified composition,
- ii) allowing insects to collect nectar from the transgenic plants and to process the nectar into honey.

Claim 20 (previously presented) A process for producing a recombinant gene product from honey, comprising:

- i) producing a transgenic plant by introducing in a plant cell a recombinant- double-stranded DNA molecule as defined in claim 12, regenerating plants from the transgenic cell, and selecting modified plants exhibiting excretion of the recombinant gene product in nectar,
- ii) allowing insects to collect nectar from the transgenic plants and to process the nectar into honey, and
- iii) isolating and purifying the gene product from the honey.

Claim 21 (currently amended) A process for producing a metabolite from honey, comprising:



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- i) producing a plant that excretes ~~the~~ this metabolite in nectar and which plant has been produced by ~~current~~ breeding and selection ~~methods~~,
  - ii) allowing insects, ~~preferably bees~~, to collect nectar from the selected plants and to process the nectar into honey, and
  - iii) isolating and purifying the metabolite from the honey.

Claim 22 (currently amended) ~~Micro-organisms~~ A microorganism containing ~~the~~ DNA ~~sequences~~ sequence according to claim 1.

Claim 23 (currently amended) ~~Micro-organisms~~ A microorganism containing a recombinant DNA ~~molecules~~ molecule according to claim 10.

Claim 24 (previously presented) A plant cell or plant cell culture transformed with one or more DNA sequences according to claim 1.

Claim 25 (currently amended) A plant cell or plant cell culture transformed with a recombinant DNA ~~molecules~~ molecule according to claim 10.

Claim 26 (previously presented) A plant consisting essentially of the plant cells of claim 24.

Claim 27 ( previously presented) A transgenic plant obtained by the process of claim 15.

Claim 28 (previously presented) Seeds, tissue culture, plant parts or progeny plants derived from a transgenic plant according to claim 27.

Claim 29 (previously presented) Honey obtained from nectar from transgenic plants, which nectar has a modified composition.

Claim 30 (currently amended) Honey obtained from nectar from transgenic plants, which nectar comprises the a recombinant gene product produced by the process of claim 20.

Claim 31 (new) A process for producing a recombinant gene product from honey, comprising:

- i) producing a transgenic plant by introducing in a plant cell a recombinant- double-stranded DNA molecule as defined in claim 13, regenerating plants from the transgenic cell, and selecting modified plants exhibiting excretion of the recombinant gene product in nectar,
- ii) allowing insects to collect nectar from the transgenic plants and to process the nectar into honey, and
- iii) isolating and purifying the gene product from the honey.

Claim 32 (new) A process for producing a recombinant gene product from honey, comprising:

- i) producing a transgenic plant by introducing in a plant cell a recombinant- double-stranded DNA molecule as defined in claim 14, regenerating plants from the transgenic cell, and selecting modified plants exhibiting excretion of the recombinant gene product in nectar,
- ii) allowing insects to collect nectar from the transgenic plants and to process the nectar into honey, and
- iii) isolating and purifying the gene product from the honey.